

REMARKS

Claims 1-49 are pending in this application. Of those claims, claims 1-17, 19, and 20 have been withdrawn from consideration pursuant to the provisions of 37 C.F.R. §1.142(b). In this Amendment, claims 26, 37, 40, 43, 46, and 49 have been amended for clarification. Care has been exercised to avoid the introduction of new matter.

Information Disclosure Statement

The Examiner stated that the IDS filed April 27, 2005, fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent documents. Attached are copies of the IDS and PTO-1449 form submitted, and copies of EP124783 and EP1146358. The other foreign patent documents listed in the PTO-1449 form were submitted with the IDS dated October 27, 2005. Applicants respectfully request the Examiner to provide a copy of the PTO-1449 form appropriately initialed indicating consideration of the cited references.

Applicants also note that another Information Disclosure Statement was filed on October 27, 2006. Applicants respectfully request the Examiner to acknowledge receipt of the IDS and provide a copy of the PTO-1449 form appropriately initialed indicating consideration of the cited references.

Specification

The disclosure has been objected to because it contains a hyperlink. In response, Applicants have amended the specification to delete the hyperlink. Withdrawal of the objection to the specification is respectfully solicited.

Drawings

The Examiner pointed out that the drawings include reference character 2b which is not mentioned in the description. Applicants understand that the Examiner pointed to Fig. 6 which includes reference character 2b.

In response, Applicants invite the Examiner's attention to paragraph [0062] describing that reference character 2b indicates the outer diameter of a cladding region. Accordingly, the description mentions reference character 2b. Withdrawal of the objection to the drawings is, therefore, respectfully solicited.

Claim Objections

Claims 26, 37, 40, 43, 46, and 49 have been objected to because of informalities identified by the Examiner. Applicants have amended the claims in a manner suggested by the Examiner. Applicants, therefore, respectfully solicit withdrawal of the objection to the claims.

Claim 21 has been rejected under 35 U.S.C. §102(b) as being anticipated by Jameson et al.

In the statement of the rejection, the Examiner asserted that Jameson et al. disclose an optical fiber identically corresponding to what is claimed. This rejection is respectfully traversed.

Anticipation requires a showing that each limitation of a claim is found in a single reference, either expressly or inherently. *Perrione v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1367 (Fed. Cir. 2005). It is well established that the disclosure of a genus in the prior art is not necessarily a disclosure of every species that is a member of that genus. See, e.g., *In re Baird*,

16 F.3d 380, 382 (Fed. Cir. 1994). If the claims are directed to a narrow range, and the reference teaches a broad range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with “sufficient specificity” to constitute an anticipation of the claims. See, e.g., *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 78 USPQ2d 1417 (Fed. Cir. 2006).

In the *Atofina* case, the prior art discloses a temperature range of 100 to 500 °C which is broader than and fully encompasses the specific claimed temperature range of 330 to 450 °C. The Federal Circuit held that given the considerable difference between the claimed range and the range in the prior art, no reasonable fact finder could conclude that the prior art describes the claimed range with sufficient specificity to anticipate this limitation of the claim. *Atofina v. Great Lakes Chem. Corp.*, *supra*.

The *Atofina* holding is applicable to the present rejection. Claim 21 recites, among other things, that the fiber has “a transmission loss of 0.25 dB/km to 0.32 dB/km at the wavelength of 1310 nm.” On the other hand, the Examiner asserted that Jameson et al. teach a standard single-mode silica fiber from Corning wherein attenuation is low (<0.4 dB/km) at 1310 nm, referring to column 2, lines 61-63. Numerical value “<0.4 dB/km” simply indicates a higher limit, but does not indicate a lower limit. Jameson et al. do not disclose any specific example which meets the attenuation “<0.4 dB/km.” Accordingly, it is apparent that Jameson et al. do not disclose the claimed range “0.25 dB/km to 0.32 dB/km” with sufficient specificity to anticipate the limitation of claim 1. *Atofina, supra*.

In addition, Jameson et al. implicitly indicate that there is no overlapping Jameson’s range with the claimed range. Jameson et al. mentions, “[t]he refractive index values supplied by Corning for SMF-28 fiber are...” (column 2, lines 63-67) (emphasis added). Attached is an

article of Corning SMF-28e Optical Fiber, which was submitted together with the IDS dated October 27, 2005. OH-absorption of Corning SMF-28e optical fiber is less than that of the SMF-28, though the typical loss of Corning SMF-28e at the wavelength of 1310 nm is 0.33 dB/km (see page 4 of the article). This value does not fall within the claimed range “0.25 dB/km to 0.32 dB/km.” Accordingly, Jameson et al. and the article of SMF-28e teach that there is no overlapping range between Jamesone’s disclosed range and the claimed range.

Based on the foregoing, Applicants submit that Jameson et al. do not disclose an optical fiber including all the limitations recited in independent claim 1 within the meaning of 35 U.S.C. §102. Applicants, therefore, submit that the imposed rejection of claim 21 under 35 U.S.C. §102(b) for lack of novelty as evidenced by Jameson et al. is not factually viable and, hence, respectfully solicit withdrawal thereof.

Claims 21-27, 30-37, 40-43, 46, and 49 have been rejected under 35 U.S.C. §102(e) as being anticipated by Bickham et al.

In the statement of the rejection, the Examiner asserted that Bickham et al. disclose an optical fiber identically corresponding to what is claimed. This rejection is respectfully traversed.

Anticipation under 35 U.S.C. §102 can be found only when the reference discloses exactly what is claimed and that where there are differences between the reference disclosure and the claim, the rejection must be based on 35 U.S.C. §103 which takes differences into account. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Prior art which teaches a value or range that is very close to, but does not overlap or touch, the claimed range, does not anticipate the claimed range. MPEP §2131.03 III.

Applicants submit that Bickham et al. do not disclose, among other things, that an optical fiber has “a transmission loss of 0.25 dB/km to 0.32 dB/km at the wavelength of 1310 nm.”

The Examiner, referring to paragraph [0016] of Bickham et al., asserted that the reference discloses a transmission loss at 1550 nm of less than about 0.2 dB/km.¹ It is noted that according to Tables 10 and 14 of Bickham et al., the lowest transmission disclosed in the reference is 0.199 dB/km or less. It is, therefore, apparent that Bickham et al. is silent on the claimed range “0.25 dB/km to 0.32 dB/km.”

Accordingly, Applicants submit that Bickham et al. do not disclose an optical fiber including all the limitations recited in independent claim 21 within the meaning of 35 U.S.C. §102. Dependent claims 22-27, 30-37, 40-43, 46, and 49 are also patentably distinguishable over Bickham et al. at least because these claims include all the limitations recited in independent claim 21. Applicants separately argue that the following dependent claims are not taught by Bickham et al.

Claim 23 recites that the transmission loss at 1310 nm is 0.30 dB/km or less. Claim 25 recites that the difference between the transmission loss at 1310 nm and the transmission loss at 1550 nm is 0.13 dB/km or less. Claim 30 recites a transmission loss of 0.176 dB/km or less at the wavelength of 1550 nm. These limitations are not disclosed in Bickham et al.

It is also noted that the Examiner asserted that paragraph [0095] mentions an optical fiber whose core does not contain a Ge-element. However, paragraph [0095] further teaches an optical fiber whose cladding does not contain both Ge- and F-elements. Thus, Bickham et al. do not disclose an optical fiber of claim 38 whose cladding contains fluorine, and an optical fiber of claim 38 whose core does not contain GeO₂.

¹ In the Office Action, the Examiner asserted that paragraph [0016] discloses value “0.02 dB/km.” However, according to the paragraph, Applicants presume that the Examiner intended to mention value “0.2 dB/km,” not “0.02 dB/km.”

Accordingly, withdrawal of the rejection of claims 21-27, 30-37, 40-43, 46, and 49 is respectfully solicited.

Claim 18 has been rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Jameson et al. and Nagayama et al. with further teachings by Chraplyvy et al.

In the statement of the rejection, the Examiner asserted that Jameson et al. teach a standard silica single-mode fiber known in the art having a mode field diameter of $9.6 +/- 0.5 \mu\text{m}$ at 1310 nm, and Nagayama et al. teaches that the Rayleigh scattering coefficient value of a standard silica fiber being about $0.85 \text{ dB/km}/\mu\text{m}^4$. On the other hand, the Examiner admitted that Jameson et al. do not teach the Rayleigh scattering coefficient value, and Nagayama et al. do not teach the mode field diameter of such a standard fiber. However, the Examiner concluded as follows:

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that standard, known fibers in art typically have the mode field diameter and Rayleigh scattering coefficient value taught by Jameson and Nagayama and therefore would recognize that a silicon fiber with such mode field diameter would also have the Rayleigh scattering coefficient in the range taught by Nagayama since this value is a basic phenomenon is proportional to $1/\text{wavelength of the light in the fiber}$ and cannot be eliminated (Chraplyvy, column 6 lines 61-67).

The motivation for doing so would have been to transmission losses in the fiber (Chraplyvy, column 6, lines 57-61; Nagayama, paragraph 0022).

(The last two full paragraph on page 10 of the Office Action). Applicants respectfully traverse this rejection.

In imposing a rejection under 35 U.S.C. §103, the Examiner is required to make a “thorough and searching” factual inquiry and, based upon such a factual inquiry, explain why

one having ordinary skill in the art would have been realistically impelled to modify particular prior art to arrive at the claimed invention. *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002). Merely identifying features of a claimed invention in disparate prior art references does not, automatically, establish the requisite motivation for combining references in any particular manner. *In re Dembicza*k, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999); *Grain Processing Corp. v. American-Maize Products Co.*, 840 F.2d 902, 5 USPQ2d 1788 (Fed. Cir. 1988).

In applying the above legal tenets to this case, it is apparent that the Examiner has not established the requisite motivational element. The Examiner has merely pointed out that Jameson et al. teach a standard silica single-mode fiber known in the art having a mode field diameter of $9.6 \pm 0.5 \mu\text{m}$ at 1310 nm, and Nagayama et al. teach that the Rayleigh scattering coefficient value of a standard silica fiber being about $0.85 \text{ dB/km}/\mu\text{m}^4$. Then, the Examiner asserted that the teachings of Jameson et al. and Nagayama et al. are combinable to address transmission losses in the fiber.

However, the Examiner did not provide any reason why an optical fiber is required to have the claimed combination of the specific ranges, i.e., a Rayleigh scattering coefficient of $0.84 \text{ dB/km}/\mu\text{m}^4$ to $0.90 \text{ dB/km}/\mu\text{m}^4$ and a mode field diameter of $8.3 \mu\text{m}$ to $9.0 \mu\text{m}$ at the wavelength of 1310 nm. What the Examiner asserted is that an optical fiber should have the Rayleigh scattering coefficient and the mode field diameter. The Examiner is required to show facts supporting whey a person skilled in the art is motivated to modify Jameson's optical fiber to have the claimed combination of the specific ranges of the Rayleigh scattering coefficient and the mode field diameter. *In re Lee, supra*. Chraplyvy et al. do not provide such facts.

It is noted that the claimed invention is intended to (i) achieve a low transmission loss as compared with most of standard single-mode optical fibers complying with the International Standard (ITU-T G.652); and (ii) a low connection loss in the case of fusion-splicing an optical fiber to another optical fiber to form a transmission line. Jameson et al. teach a standard single-mode optical fiber complying with ITU-T G.652, and Nagayama et al. teach an optical fiber with a low transmission loss. These references do not teach or suggest consideration of balancing reduction of the transmission loss and minimization of the connection loss. Accordingly, there is no specific motivation to modify Jameson et al. based on Nagayama et al. to arrive at the claimed combination of the specific ranges of the Rayleigh scattering coefficient and the mode field diameter. Chraplyvy et al. do not provide such motivation, either.

Based upon the foregoing, Applicants submit that the Examiner has not established a *prima facie* basis to deny patentability to the claimed invention for lack of the requisite realistic motivation. Applicants, therefore, submit that the imposed rejection of claim 18 under 35 U.S.C. §103 for obviousness predicated upon Jameson et al. and Nagayama et al. with further teachings by Chraplyvy et al. is not viable and, hence, respectfully solicit withdrawal thereof.

Claim 29 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bickham et al. in view of Sasaoka et al.

This rejection is respectfully traversed. Claim 29 is patentably distinguishable over Bickham et al. and Sasaoka et al. at least because the claim includes all the limitations recited in independent claim 21.

Applicants specifically submit the applied combination of Bickham et al. and Sasaoka et al. does not teach an optical fiber including all the limitations recited in claim 29. Bickham et al.

teach a preferable transmission loss of less than 0.2 dB/km at the wavelength 1550 nm, but merely teach a dispersion shifted optical fiber with the lowest transmission loss of 0.199 dB/km at the wavelength of 1550 nm. On the other hand, Sasaoka et al. teach a Petermann-I mode field diameter, but merely teach a dispersion-control technique for such a dispersion flatter optical fiber and a dispersion compensation optical fiber. It is thus clear that these references do not teach or suggest the balancing of the reduction of the transmission loss and the minimization of the connection loss, as discussed with respect to claim 18. Accordingly, there is no motivation to modify an optical fiber of Bickham et al. based on the teachings of Sasaoka et al. to arrive at the claimed invention.

Therefore, Applicants respectfully solicit withdrawal of the rejection of claim 29, and favorable consideration thereof.

Claims 38, 39, 44, 45, 47, and 48 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Bickham in view of Kato et al.

This rejection is respectfully traversed. Claims 38, 39, 44, 45, 47, and 48 are patentably distinguishable over Bickham et al. and Kato et al. at least because the claims include all the limitations recited in independent claim 21.

Applicants specifically note that the applied combination of the references does not teach the claimed invention. As described above, Bickham et al. in Tables 10 and 14 discloses a dispersion shifted optical fiber having the transmission loss of 0.199 dB/km at the wavelength of 1550 nm as the lowest transmission loss. On the other hand, Kato et al. teach a dispersion shifted optical fiber whose cladding contains an F-element. It is, thus, clear that these reference do not teach or suggest the balancing of the reduction of the transmission loss and the

minimization of the connection loss, as discussed with respect to claim 18. Accordingly, there is no motivation to modify an optical fiber of Bickham et al. based on the teachings of Kato et al. to arrive at the claimed invention.

Therefore, Applicants respectfully solicit withdrawal of the rejection of claims 38, 39, 44, 45, 47, and 48, and favorable consideration thereof.

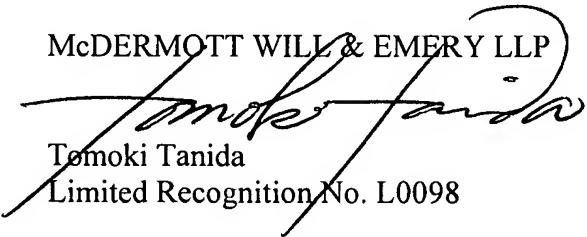
Conclusion

It should, therefore, be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP


Tomoki Tanida
Limited Recognition No. L0098

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 AJS:TT
Facsimile: 202.756.8087
Date: December 14, 2006

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